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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Galloway, et al.

SERIAL NO.: 08/481,685

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Group Art Unit: 1315

#34 3/5/01

FOR: MULTILAYER THERMOPLASTIC FILMS AND PACKAGES MADE THEREFROM

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on the date shown below.

(Registration No. 36,036)

Date: 8/22/96

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

AFFIDAVIT OF KEITH D. LIND UNDER 37 C.F.R. 1.132

I, Keith D. Lind, hereby state as follows:

1. I am a co-inventor of the subject matter of this application, Multilayer Thermoplastic Films and Packages Made Therefrom.

2. I have read and understood claims 1 to 21 as amended, which cover an irradiated, heat shrinkable multilayer polymeric film with a barrier layer and an outer layer of a blend of EVA and an ethylene alpha-olefin copolymer formed from a polymerization reaction in the presence of a single site catalyst, wherein the ethylene alpha olefin copolymer has a molecular weight distribution of less than 2.5 and has a melt flow rate ratio of from about 7 to about 12.

3. I have read and understood paragraphs 8 and 9 of

the Office Action mailed February 22, 1996, and the following references cited therein:

U.S. Patent No. 4,457,960, to Newsome

D. Van der Sanden, "A New Family of Linear Ethylene Polymers with Enhanced Sealing Performance," TAPPI Journal pp. 99-101 (Feb. 1992)

U.S. Patent No. 4,894,107, to Tse

U.S. Patent No. 4,400,428, to Rosenthal

4. In my opinion, claims 1-21 as amended are not obvious in view of any combination of the cited references.

5. Dow Affinity resins, also known as Dow DGCT resins, and Exxon Exact resins, are ethylene alpha olefin copolymers formed from a polymerization reaction in the presence of a single site catalyst. Internal testing of American National Can Company has shown that the Exxon Exact resins and Dow Affinity resins differ in various physical properties, including the I_{10}/I_2 ratio. The I_{10}/I_2 ratio is known to a person of ordinary skill in the art of making polymeric films as a "flow rate ratio" or "melt flow ratio" of condition 190/10 to condition 190/2.16 as per ASTM D1238. The condition refers to the temperature in degrees Celsius per weight in kilograms. The flow rate ratio I_{10}/I_2 is a dimensionless number that measures the processability of a resin. Under internal testing by American National Can Company, it was determined that the Dow Affinity resins have

a flow rate ratio of greater than 7.0, and that the Exxon Exact resins in the tests have a flow rate ratio of less than 7.

6. The only reference cited by the Examiner teaching the use of ethylene alpha-olefin copolymers formed from a polymerization reaction in the presence of a single site catalyst is the Van der Sanden article. The Van der Sanden article does not disclose the melt flow rate ratio of the ethylene alpha-olefin copolymers, and does not address or disclose improved results of films of the invention over prior art films that result from the use of a polymer having a melt flow rate ratio of from about 7 to about 12. Furthermore, while the Van der Sanden article discloses narrow molecular weight distribution as an advantage of ethylene alpha-olefin copolymers formed from a polymerization reaction in the presence of a single site catalyst, it does not teach the range of less than 2.5 claimed in this application.

7. Attached hereto at Exhibit A are pages from a laboratory notebook of American National Can Company for an experiment entitled "Exact Polymer Evaluation-Processability Improvement." These tests were conducted by the Materials Research Department of American National Can Company to determine the processability and physical properties of multilayer, heat shrinkable films made with a barrier layer and with outer layers of a blend of EVA and an ethylene

alpha-olefin copolymer formed from a polymerization reaction in the presence of a single site catalyst. The particular ethylene alpha olefin copolymer studied in this experiment is the Exact resin, manufactured by Exxon Chemical Company. As set forth in paragraph 5 above, the Exact resin has been measured by internal testing of American National Can Company to have a melt flow rate ratio of less than 7.

8. Exhibit A shows that variables 3 to 6 are three-layer films with a barrier layer and an outer layer of a blend of an Exact resin, manufactured by Exxon Chemical Company, and an EVA. Specifically, the outer layers of variables 3 to 6 have the following structures:

V3: 95% Exact - 5% EVA

V4: 90% Exact - 10% EVA

V4A: 80% Exact - 20% EVA

V5: 95% Exact - 5% EVA

V5A: 80% Exact - 20% EVA

V6: 90% Exact - 10% EVA

The notebook indicates that none of films V3 to V6 processed acceptably.

9. At Exhibit B are pages from an American National Can Company laboratory notebook that shows the results of Experiment No. 15408-93. The notes show that variables 5 to 7 are three-layer films with a barrier layer and an outer

layer of a blend of a CGCT ("Constrained Geometry Catalyst Technology") polymer, manufactured by Dow Chenical Company which is an ethylene alpha-olefin copolymer formed from a polymerization reaction in the presence of a single site catalyst. Internal testing of American National Can Company shows that Dow's CGCT polymers have a flow rate ratio of grater than 7. Specifically, the outer layers of variables 5 to 7 have the following structures:

V5: 90% CGCT - 10% EVA

V6: 80% CGCT - 20% EVA

V7: 10% CGCT - 90% EVA

It was noted that films V-5, V-6, and V-7 all had good optics and were acceptable films.

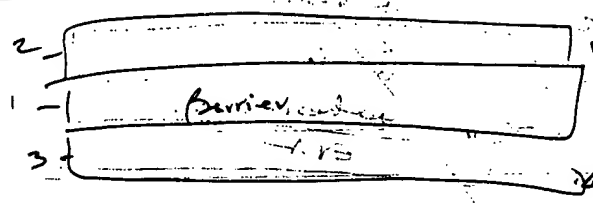
10. I hereby declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine and imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application of any patent issued thereon.

Keith D. Lind

JCT/eeh.;/148

Exhibit A

8/24



(2) Barrier = EVOH copolymer

(4) Barrier thickness .10 - .30 mil

(5) " " = about 20

(6) 2nd thickness about .40 - .50 mil
2nd layer = inner sealant

(7) 2nd layer = about .45 thickness

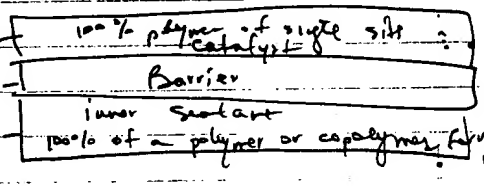
(8) 3rd layer = about 1.10 - 1.20 mil thick

(9) 3rd layer = 1.15 mil thickness

(10) Barrier about .20 - . 2nd layer about .45 mil
3rd layer about 1.15 mils

(11) package

(12) Film



Film irradiated

(13) Barrier layer EVOH copolymer

(14) Barrier = EVOH copolymer

(15) Barrier = about 0.20 mil 2nd layer about .45 mil 3rd layer = about 1.15 mil

(16) package of

(21) package

Best Available Copy

Expert Polymer Evaluation - Processability Improvement thru Blending Screw Design NTC 2-2543

		OUT	IN	
Control	V-1	3651 - 3649 - 3651		
	V-2	3651 - 3649 - 4201		
	V-3	3651 - 3649 - 95/5 Blend 3025/30256		See V-4
	V-4	3651 - 3649 - 90/10 Blend 3025/30256		CNR
V-4A 80/20 Blend 3025/30256	V-5	3651 - 3649 - 95/5 Blend 3025/30256		Patent Pending
V-5A 80/20 Blend 3025/30256	V-6	3651 - 3649 - 90/10 Blend 3025/30256		Patent Pending

	Rpm	amps	Psig	Temp
C EXT-2	80	30	5200	400
C EXT-3	143	16	800-1200	311
IN EXT-4				
Control V-1	25	42	5800	430°F
V-2				
V-3	CNR			
V-4	5 (CNR)	27	4400	430
V-4A	7 CNR	32	5300	430
V-5A	4	35	5500	420°F

	V-1	V-3	V-4	V-4A	V-5A
RH speed	20.5		20.5	20.5	
RH Temp	210		210	210	
SC Speed	17.1		17.1	17	
SC Temp	70		60	60	
Tape width	3½"		3½"	4"	
Film width	14½"		No Film	No Film	

Layer Fixture Start-up

LF

V-1	V-3	V-4A
229	232	233
68	72	74
28	31	41
143	135	116
227	212	228
48	55	70
42	43	38
140	113	134

AVG
228
64
39
130

Conclusion: Epson (3035+3028) Expect Norsno do not Exactly meet the shrink needs

Comments:
V-2 Cancelled / 2 Zhang
V-3 Did not Run since
V-4 CNR 5 Rpm Could not sustain a bubble
[illegible]

Exhibit B

E 15401-97 continued 2-17-97

Low CG CT Polymer Evaluation - Shrewsbury Office

Structure

V-1 Control 3651 - 3649 - 3651

V-5 3651 - 3649 - 90/10 Blend LN
O XUK2A37/ 97.06

V-8 3651 - 3649 -

V-6 3651 - 3649 - 80% / 20
XUK
2A37 / 97.06

V-7 3651 - 3649 - 80% 97.06
10% 31892
10% 2A77

	Rpm	Amps	Press	Temp
Out Ext 4	85	3	5300	400 °F
C	143	157	800	312

From V-1

V-5	14	42	5500	430 °F
V-6	17	42	5500	430 °F
V-7	25	33	4600	430 °F
V-8	25	35	4900	430 °F

	V-1	V-	V-6	V-7
RH Temp	210	210	210	210
RH Speed	21	21	21	21
SC Temp	50	50	55	52
SC Speed	17.7	17.7	175	175
Layer width	3½	3½	3½"	3½
Film width	14 5/8"	12 5/8"	17"	14½
Coextruders	4B	43	43	43

Comments:
V-5 Film looks OK (Optex)

V-6 Film Optex look good better than V-5

V-7 " " " "

V-8 " " " "

Layer Ratios

V-5	237	206	240
	78	66	82
	42	32	53
	110	101	105
	65 218	227 68	252
	52	58	76
	123	95	54
			121
AV6	237		
	79		
	58		
	110		